REMARKS

The following Remarks are made in response to the Non-Final Office Action mailed May 22, 2002, in which claims 20-39 were rejected. With this Amendment, claims 34 and 38 have been amended to more particularly point out and distinctly claim the subject matter which Applicant regards as the invention, and claims 40 and 41 have been added. Claims 20-41, therefore, remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 103

Claims 20, 21, 25, 28, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the DiGiovanni U.S. Patent No. 6,381,045 in view of the Pressler U.S. Patent No. 6,005,700. Claims 26, 27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni in view of Pressler, as applied to claims 20, 21, 25, 28, 30, and 31 above, and further in view of the Sedlmayr U.S. Patent No. 6,034,818. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni in view of Pressler, as applied to claims 20, 21, 25, 28, 30, and 31 above, and further in view of the Kawakami U.S. Patent No. 5,848,203. Applicant respectfully traverses these rejections.

The light pipe assembly of independent claim 20 includes a transmit light pipe adapted to optically transmit information optically transmitted by the optical transducer from the optical transducer to the optical data port, and a receive light pipe adapted to optically receive information via the optical data port and optically transmit the received information to the optical transducer. In addition, the method of optically coupling an optical transducer with an optical data port of independent claim 28 includes receiving light rays at the optical data port, collimating the received light rays into a first end of a receive light pipe, optically transmitting the received light rays within the receive light pipe from the first end of the receive light pipe to a second end of the receive light pipe, optically transmitting the received light rays to the optical transducer from the second end of the receive light pipe, and receiving the received light rays at the optical transducer.

The Examiner contends that element 30 of the DiGiovanni patent constitutes an optical transducer, that elements 60,15,20 of the DiGiovanni patent constitute an optical data port, that elements 20,55 of the DiGiovanni patent constitute a transmit fiber cable, and that

elements 15,55 of the DiGiovanni patent constitute a receive fiber cable. The Examiner recognizes, however, that the DiGiovanni patent fails to disclose a transmit light pipe and a receive light pipe as recited in independent claim 20 and a receive light pipe as recited in independent claim 28. As such, the Examiner contends that the Pressler patent discloses that light pipes and fiber cables are interchangeable light transfer mediums. Thus, the Examiner suggests that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify DiGiovanni to have light pipes as taught by Pressler.

Applicant submits, however, that no motivation or teaching exists for modifying the DiGiovanni patent in view of the Pressler patent in the manner suggested by the Examiner. More specifically, element 55 of the DiGiovanni patent is a dual concentric core fiber and includes a central, single-mode core 15, annular, single-mode cladding 20, and annular, multimode cladding 25 with cladding 20 being concentric with and surrounding core 15 and cladding 25 being concentric with and surrounding cladding 20 (Figs. 1 and 2). As such, inbound messages are received from the annular portion of the dual concentric core fiber and outbound messages are injected into the central core portion of the dual concentric core fiber or vice versa (col. 1, lines 49-65). Thus, the dual concentric core fiber of the DiGiovanni patent provides for bi-directional communication over a single optical fiber. The Pressler patent, however, does not teach or suggest interchanging a dual concentric core fiber which provides bi-directional communication with a light pipe. Thus, Applicant submits that no motivation or teaching exists for replacing the dual concentric core fiber of the DiGiovanni patent with a light pipe of the Pressler patent.

In addition, even if one were to modify the DiGiovanni patent in view of the Pressler patent, in the manner suggested by the Examiner, Applicant submits that modifying the DiGiovanni patent in view of the Pressler patent would render optical communication of the DiGiovanni patent inoperative and would not result in the present invention. More specifically, since the electro-optical devices of the DiGiovanni patent include an annular source 40 which communicates with an annular detector 75 and a central detector 45 which communicates with a central source 70, communication between the electro-optical devices requires a central communication path and an annular communication path concentric with the central communication path (see Fig. 2; col. 3, lines 8-18). The Pressler patent, however, does not teach or suggest a fiber optical cable or a light pipe which provides bi-directional

communication along a central communication path and an annular communication path concentric with the central communication path. Applicant submits, therefore, that interchanging the dual concentric core fiber of the DiGiovanni patent with a light pipe of the Pressler patent would not provide communication along a central communication path and an annular communication path concentric with the central communication path as required by the electro-optical devices of the DiGiovanni patent. Thus, optical communication of the DiGiovanni patent would be inoperative.

Thus, modifying the DiGiovanni patent by the Pressler patent, in the manner suggested by the Examiner, would not overcome the shortcomings of the DiGiovanni patent and, therefore, would not result in the present invention. Applicant, therefore, submits that the combination of the DiGiovanni patent and the Pressler patent does not teach or suggest the present invention as claimed in independent claims 20 and 28.

In view of the above, Applicant submits that independent claims 20 and 28 are patentably distinct from the DiGiovanni and Pressler patents and, therefore, in condition for allowance. Furthermore, as dependent claims 21 and 25-27 further define patentably distinct claim 20, and dependent claims 29-33 further define patentably distinct claims 28, Applicant submits that dependent claims 21 and 25-27, and dependent claims 29-33 are also in condition for allowance. Applicant, therefore, respectfully requests that the rejection of claims 20, 21, 25-33 under 35 U.S.C. 103(a) be reconsidered and withdrawn, and that claims 20, 21, 25-33 be allowed.

Claims 22-24 and 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni in view of Pressler, as applied to claims 20, 21, 25, 28, 30, and 31 above, and further in view of Sedlmayr and Kawakami.

With this Amendment, independent claim 34 has been amended to recite that the optical interlink includes an optical transducer adapted to transmit and receive information optically, a light pipe having a first end optically coupled to the optical transducer and a second end arranged to provide an optical data port, a transmit lens adapted to increase an angle of illumination of light exiting the optical data port, and a receive lens adapted to collimate light into the light pipe.

As outlined above, Applicant submits that modifying the DiGiovanni patent by the Pressler patent, in the manner suggested by the Examiner, would not overcome the

shortcomings of the DiGiovanni patent and, therefore, would not result in the present invention. Applicant, therefore, submits that the combination of the DiGiovanni and Pressler patents does not teach or suggest the present invention as claimed in independent claim 20 nor independent claim 34. As dependent claims 22-24 further define patentably distinct claim 20 and dependent claims 35-39 further define patentably distinct claim 34, Applicant submits that dependent claims 22-24 and dependent claims 35-39 are also in condition for allowance. Applicant, therefore, respectfully requests that the rejection of claims 22-24 and 34-39 under 35 U.S.C. 103(a) be reconsidered and withdrawn and that claims 22-24 and 34-39 be allowed.

With respect to the DiGiovanni, Pressler, Sedlmayr, and Kawakami patents, none of these patents, individually or in combination, teach or suggest a method of optically coupling an optical transducer with an optical data port, as claimed in new claim 41. As such, Applicant believes that claim 41 is patentable over the art of record, and that claim 41 is within the scope of a search properly conducted under the provisions of M.P.E.P. 904.02. Accordingly, Applicant submits that claim 41 is deemed to be in condition for allowance.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 20-41 are all in condition for allowance and requests reconsideration of the Application and allowance of all pending claims.

Attached hereto is a marked-up version of the changes made to the specification and/or the claims by the current Amendment. The attached pages are captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE".**

Any inquiry regarding this Amendment and Response should be directed to John C. Moran at Telephone No. (970) 898-7010, Facsimile No. (970) 898-7247. In addition, all correspondence should continue to be directed to the following address:

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Amendment and Response
Applicant: Curtis Gregory Kelsay
Serial No.: 09/491,994
Filed: Jan. 26, 2000
Docket No.: 10990356-2
Title: AN OPTICAL INTERLINK BETWEEN AN OPTICAL TRANSDUCER AND OPTICAL DATA PORT

Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this letter and the papers as described herein are being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (703) 872-9318 on this 16th day of August, 2002.

By: Name: Scott A. Lund

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Curtis Gregory Kelsay	Examiner: Kevin D. Williams
Serial No.:	09/491,994	Group Art Unit: 2854
Filed:	Jan. 26, 2000	Docket No.: 10990356-2
Title:	AN OPTICAL INTERLINK BETWEEN AN OPTICAL TRANSDUCER AND OPTICAL DATA PORT	

AMENDMENT AND RESPONSE

Commissioner for Patents
Washington, D.C. 20231

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Dear Sir/Madam:

This Amendment and Response is in reply to the Non-Final Office Action mailed on May 22, 2002. Please amend the above-identified patent application as follows:

IN THE CLAIMS

Please amend claims 34 and 38.

Please add new claims 40 and 41.

1-19 (Previously Cancelled).

20. A light pipe assembly adapted to optically exchange information between an optical transducer adapted to transmit and receive information optically and an optical data port, the light pipe assembly comprising:

a transmit light pipe adapted to optically transmit information optically transmitted by the optical transducer from the optical transducer to the optical data port; and

a receive light pipe adapted to optically receive information via the optical data port and optically transmit the received information to the optical transducer.

21. The light pipe assembly of claim 20, wherein a first end of the transmit light pipe is adapted to be optically coupled to the optical transducer and a second end of the transmit light pipe is adapted to provide a portion of the optical data port.

22. The light pipe assembly of claim 21, further comprising:

a first lens provided between the first end of the transmit light pipe and the optical transducer, wherein the first lens is adapted to optically couple the optical transducer to the transmit light pipe and collimate light received from the optical transducer into the first end of the transmit light pipe; and

a second lens provided at the second end of the transmit light pipe, wherein the second lens is adapted to increase an angle of light exiting the optical data port.

23. The light pipe assembly of claim 22, wherein the first lens and the second lens of the transmit light pipe are formed as part of the transmit light pipe.

24. The light pipe assembly of claim 22, wherein the angle of light exiting the optical data port is adapted to diverge from the optical data port.

25. The light pipe assembly of claim 20, wherein a first end of the receive light pipe is adapted to be optically coupled to the optical transducer and a second end of the receive light pipe is adapted to provide a portion of the optical data port.

26. The light pipe assembly of claim 25, further comprising:

a first lens provided between the first end of the receive light pipe and the optical transducer, wherein the first lens is adapted to optically couple the receive light pipe to the optical transducer; and

a second lens provided at the second end of the receive light pipe, wherein the second lens is adapted to collimate light received at the optical data port into the second end of the receive light pipe.

27. The light pipe assembly of claim 26, wherein the first lens and the second lens of the receive light pipe are formed as part of the receive light pipe.

28. A method of optically coupling an optical transducer adapted to transmit and receive information optically with an optical data port, the method comprising the steps of:

receiving light rays at the optical data port;

collimating the received light rays into a first end of a receive light pipe;

optically transmitting the received light rays within the receive light pipe from the first end of the receive light pipe to a second end of the receive light pipe;

optically transmitting the received light rays to the optical transducer from the second end of the receive light pipe; and

receiving the received light rays at the optical transducer.

29. The method of claim 28, wherein the step of collimating the received light rays includes passing the received light rays through a lens at the first end of the receive light pipe.

30. The method of claim 28, further comprising the steps of:

transmitting light rays from the optical transducer;

collimating the transmitted light rays into a first end of a transmit light pipe;

optically transmitting the transmitted light rays within the transmit light pipe from the first end of the transmit light pipe to a second end of the transmit light pipe; and

distributing the transmitted light rays from the second end of the transmit light pipe.

31. The method of claim 30, wherein the step of distributing the transmitted light rays includes exiting the transmitted light rays from the optical data port.

32. The method of claim 31, wherein exiting the transmitted light rays from the optical data port includes increasing an illumination angle of the transmitted light rays exiting from the optical data port.

33. The method of claim 32, wherein increasing the illumination angle of the transmitted light rays includes passing the transmitted light rays through a lens at the second end of the transmit light pipe and diverging the transmitted light rays exiting from the optical data port.

34. (Twice Amended) An optical interlink, comprising:

an optical transducer adapted to transmit and receive information optically;

a light pipe having a first end optically coupled to the optical transducer and a second end arranged to provide an optical data port; ~~and~~

~~at least one of a~~ transmit lens adapted to increase an angle of illumination of light exiting the optical data port; and

a receive lens adapted to collimate light into the light pipe.

35. The optical interlink of claim 34, wherein the light pipe provides bi-directional communication between the optical transducer and the optical data port.

36. The optical interlink of claim 34, wherein the optical transducer includes an infra-red transducer.

37. The optical interlink of claim 34, wherein the optical transducer includes a receive portion and a transmit portion, and wherein the light pipe includes a receive light pipe optically coupled to the receive portion of the optical transducer and a transmit light pipe optically coupled to the transmit portion of the optical transducer.

38. (Amended) The optical interlink of claim 37, ~~wherein the optical interlink includes the transmit lens and the receive lens,~~ wherein the transmit lens is adapted to increase the angle of illumination of light from the transmit light pipe and the receive lens is adapted to collimate light into the receive light pipe.

39. The optical interlink of claim 34, wherein the optical interlink is configured to optically exchange information for a printer, wherein the optical transducer and the light pipe are disposed within the printer and wherein the light pipe is adapted to optically exchange information with the optical transducer and externally of the printer.

40. (New) The light pipe assembly of claim 20, wherein the transmit light pipe is adapted to diverge light from the optical data port, and wherein the receive light pipe is adapted to converge light on the optical transducer.

41. (New) A method of optically coupling an optical transducer adapted to transmit and receive information optically with an optical data port, the method comprising the steps of:

receiving light rays at the optical data port;

collimating the received light rays into a receive light pipe;

optically transmitting the received light rays within the receive light pipe;

optically transmitting the received light rays to the optical transducer from the receive light pipe, including converging the received light rays on the optical transducer;

transmitting light rays from the optical transducer;

collimating the transmitted light rays into a transmit light pipe;

optically transmitting the transmitted light rays within the transmit light pipe; and

distributing the transmitted light rays from the transmit light pipe, including exiting and diverging the transmitted light rays from the optical data port.